Sub B1

What is claimed:

1. A light source comprising:

a sealed, light-transmissive tube containing high pressure gases or high pressure gas mixtures at a high pressure;

a microhollow cathode (MHC) discharge comprising a first electrode mounted within said tube, said first electrode consisting of a conductor having a single hole or a plurality of holes therein, each of said holes having an arbitrary shape and an area in the range from 0.001 mm^2 to 1 mm^2;

a second electrode mounted within said tube and spaced from first electrode by an insulator which has a hole or holes similar to the hole(s) in the first electrode;

electrical means for coupling electrical energy to said first and second electrodes for producing discharges in each of the holes in said first electrode;

both electrodes having a thickness in the range from 0.05 mm to 0.5 mm; and

the insulating spacer having a thickness in the range of 0.1mm to 1 mm.

2. The light source of claim 1 wherein the high pressure is in a range of about 100 Torr to about 1,500 Torr.

3. The light source of claim 1 wherein the high pressure gas is Ne.

4. The light source of claim 1 wherein the high pressure gas is He.

5. The light source of claim 1 wherein the high pressure gas is Ar.

6. The light source of claim 1 wherein the high pressure gas is a mixture of Ne and H_2 , and wherein the H_2 concentration is below 1%.

7. The light source of claim 1 wherein the high pressure gas is a mixture of Ne and N_2 and wherein the N_2 concentration is below 1%.

8. The light source of claim 1 wherein the high pressure gas is a mixture of Ar and O_2, and wherein the O_2 concentration is below 1%.

9. The light source of claim 1 wherein the high pressure gas is a mixture of He and H_2 and wherein the H_2 concentration is below 1%.

10. The light source of claim 1 wherein the high pressure gas is a mixture of He and O_2 and wherein the O_2 concentration is below 1%.

11. The light source of claim 1 wherein the high pressure gas is a mixture of He and N_2 and wherein the N_2 concentration is below 1%.

12. A method of generating intense hydrogen Lyman-a or Lyman-ß emissions or atomic oxygen and nitrogen emissions in the spectral range from 100 nm to 150 nm comprising:

placing a MHC discharge device into a container which contains a gas mixture.

13. A light source comprising:

a sealed, light-transmissive tube containing gases or gas mixtures at a high pressure;

an array of microhollow cathode discharges comprising multiple microhollow cathode discharges, wherein

each microhollow cathode discharge comprises a first electrode mounted within said light-transmissive tube, said first electrode consisting of a conductor having a single hole or a plurality of holes therein, each of said holes having an arbitrary shape and an area in the range from 0.001 mm^2 to 1 mm^2;

an anode comprising a distributed resistive ballast comprising a semi-insulating material mounted within said light-transmissive tube and spaced apart from the adjoining first electrode of the microhollow cathode discharge array by an insulator which has a hole or holes similar to the hole(s) in the first electrode; and

electrical means for coupling electrical energy to said first and second electrodes for producing discharges in each of the holes in said first electrode; and

an insulating spacer.

14. The light source of claim 13 wherein the semi-insulating material is silicon.